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I hereby certify that this paper and/or fee is being deposited with the United States Postal Service "EXPRESS MAIL POST OFFICE TO ADDRESSEE" service under 37 C.F.R. 1.10 on the date indicated above and is addressed to the Assistant Commissioner For Patents, Washington, DC 20231.
Name: Dennis S. Fernandez
Signature [Signature] June 10, 1998
Signature Date

APPLICATION TRANSMITTAL LETTER

The Honorable Commissioner
of Patents and Trademarks
Washington, D.C. 20231
Attn: **BOX PATENT APPLICATION**

Sir:

Transmitted herewith for filing is the patent application of

Inventors: **Fernandez et al.**

Entitled: **DIGITAL TELEVISION WITH SUBSCRIBER CONFERENCE OVERLAY**

12 No. pages of specification, including title page, claims and abstract

3 No. sheets of X informal, formal drawings

Also enclosed are:

- X Executed ~~Combined Declaration and Power of Attorney~~ for Patent Application
 An Original Executed Assignment of the Application
 Form PTO-1595 (Recordation Cover Sheet for Assignment)
X Verified Statement Claiming Small Entity Status *w/ Transmittal*
 Executed Power of Attorney from Assignee
 An Associated Power of Attorney
X Information Disclosure Statement
X Form 1449 (A&B), including references

 A certified copy of a application

FEES DUE

The fees due for filing the application pursuant to 37 C.F.R. 1.16 and for recording the Assignment, if any, are determined as follows:

CLAIMS					
	No. of Claims		Extra Claims	Rate	Fees
Basic Application Fee (\$790 large entity; \$395 small entity)					\$ 395.00
Total Claims	8	Minus 20 =	0	X \$22 = X \$11 (small) =	0.00
Total Independent Claims	3	Minus 3 =	1	X \$82 = X \$41 (small) =	0.00
If Multiple Dependent Claims are presented, add \$250.00					
If Assignment enclosed, add Assignment Recording Fee \$40.00					
TOTAL APPLICATION FEE DUE					\$ 395.00

PAYMENT OF FEES

The full fee due in connection with this communication is
and is provided as follows:

\$ 395.00

X The Commissioner is hereby authorized to charge the fees associated with this communication or credit any overpayment to Deposit Account No: 500482. A duplicate copy of this authorization is enclosed.

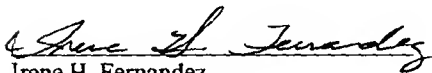
X A Check No. 1003 for the above specified full fee is enclosed.

This application is filed pursuant to 37 C.F.R. 1.53 in the name of the above-identified Inventors.

Please direct all correspondence concerning the above-identified application to the following address:

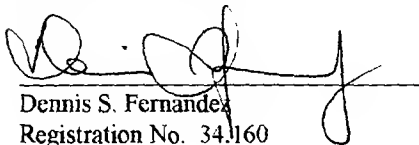
Dennis S. Fernandez, Esq.
2085 Portola Road
Woodside, CA 94062-2639

Respectfully submitted,



Irene H. Fernandez
Registration No. 34,625

6/10/98
Date



Dennis S. Fernandez
Registration No. 34,160

June 10, 1998
Date

Writer's Direct Number:
650 529-9237

10 June 1998

Box Patent Application

The Honorable Commissioner
of Patents and Trademarks
Washington, D.C. 20231

Re: U.S. Utility Patent Application
Appl. No. (to be assigned); Filed (Herewith)
For: **DIGITAL TELEVISION WITH SUBSCRIBER CONFERENCE OVERLAY**
Inventors: Dennis S. Fernandez and Irene H. Fernandez
Our Ref: FERN-P003

Sir:

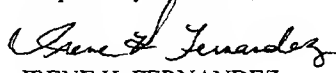
The following documents are forwarded herewith for appropriate action by the U.S. Patent and Trademark Office:

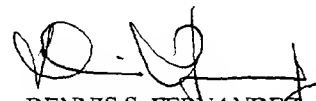
1. U.S. UTILITY APPLICATION
entitled:
DIGITAL TELEVISION WITH SUBSCRIBER CONFERENCE OVERLAY
having named inventors:
Irene H. Fernandez and Dennis S. Fernandez
 - a. a specification consisting:
 - (i) 9 pages prior to the claims, including title page;
 - (ii) 2 pages of claims;
 - (iii) 1 page abstract;
 - b. 3 sheets of **informal** drawings: (FIGs. 1-5);
2. An **original, executed** Declaration by named inventors;
3. Form PTO-1082 (in duplicate);
4. A return post card; and
5. Check No. 1003 for \$ 395.00 to cover:

Patent application filing fee:	\$ 395.00
Excess claims fee:	\$ 0.00
6. Verified Small Entity Status Statement, with Cover Transmittal

It is respectfully requested that the attached postcard be stamped with the filing date of the above documents and unofficial application number and returned to the addressee as soon as possible.

Respectfully submitted,


IRENE H. FERNANDEZ
Reg. No. 34,625


DENNIS S. FERNANDEZ
Reg. No. 34,160

Enclosures

Attorney Docket No.: FERN-P003

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE


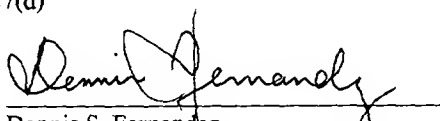
In re application of:

Application No.: Not yet assignedGroup No.: Not yet assignedFiled: June 10, 1998Examiner: Not yet assignedTitle: **DIGITAL TELEVISION WITH SUBSCRIBER CONFERENCE OVERLAY**Inventors: **Dennis S. Fernandez and Irene H. Fernandez**Assistant Commissioner for Patents
Washington, D.C. 20231SUBMISSION OF VERIFIED STATEMENT(S)
TO ESTABLISH SMALL ENTITY STATUS

The attached statement is being submitted to establish small entity status in this

☒ Application
☐ Patent

by the

☒ Independent inventor(s) 37 CFR 1.9(c) and 1.27(b)
☐ Non-inventor supporting claim by another 37 CFR 1.9(c) and 1.27(b)
☐ Small Business Concern 37 CFR 1.9(d) and 1.27(c)
☐ Nonprofit Organization 37 CFR 1.9(e) and 1.27(d)
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**STATEMENT CLAIMING SMALL ENTITY STATUS
(37 CFR 1.9(f) & 1.27(b))--INDEPENDENT INVENTOR**

Docket Number: **FERN-P003**

Applicant, Patentee, or Identifier: Fernandez et al.
Application or Patent No <TBA>
Filed or Issued: June 10, 1998
Title: DIGITAL TELEVISION WITH SUBSCRIBER CONFERENCE OVERLAY

As a below named inventor(s), I hereby state that I qualify as an independent inventor as defined in 37 CFR 1.9(c) for purposes of paying reduced fees to the Patent and Trademark Office described in:

- ☒ the specification filed herewith with title as listed above.
☐ the application identified above.
☐ the patent identified above.

I have not assigned, granted, conveyed, or licensed, and am under no obligation under contract or law to assign, grant, convey, or license, any rights in the invention to any person who would not qualify as an independent inventor under 37 CFR 1.9(c) if that person had made the invention, or to any concern which would not qualify as a small business concern under 37 CFR 1.9(d) or a nonprofit organization under 37 CFR 1.9(e).

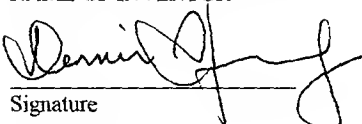
Each person, concern, or organization to which I have assigned, granted, conveyed, or licensed or am under an obligation under contract or law to assign, grant, convey, or license any rights in the invention is listed below:

- ☒ No such person, concern, or organization exists.
☐ Each such person, concern, or organization is listed below.

Separate statements are required from each named person, concern, or organization having rights to the invention stating their status as small entities. (37 CFR 1.27)

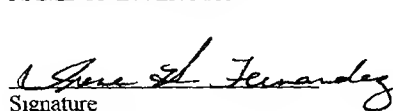
I acknowledge the duty to file, in this application or patent, notification of any change in status resulting in loss of entitlement to small entity status prior to paying, or at the time of paying, the earliest of the issue fee or any maintenance fee due after the date on which status as a small entity is no longer appropriate. (37 CFR 1.28(b))

DENNIS SUNGA FERNANDEZ
NAME OF INVENTOR


Signature

June 10, 1998
Date

IRENE HU FERNANDEZ
NAME OF INVENTOR


Signature

June 10, 1998
Date

5

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Application
For
United States Utility Patent

Title:

DIGITAL TELEVISION WITH
SUBSCRIBER CONFERENCE OVERLAY

Inventors:

DENNIS S. FERNANDEZ, residing at 2085 Portola Road,
Woodside, CA 94062, a citizen of the United States; and
IRENE H. FERNANDEZ, residing at 2085 Portola Road,
Woodside, CA 94062, a citizen of the United States.

DIGITAL TELEVISION WITH SUBSCRIBER CONFERENCE OVERLAY

Field of Invention

The invention relates to digital television systems, particularly to subscriber video conferencing with conventional programming.

5

Background of Invention

Digital television (DTV) attributes have been standardized by industry (e.g., Advanced Television Systems Committee (ATSC) and government (U.S. Federal Communications Commission (FCC)). Such DTV standards, which provide enhanced multimedia quality, as well as interactive data services, are hereby incorporated by reference. Generally, however, DTV specifications contemplate program delivery to various receiver units, but not necessarily communication between receiver units. Accordingly, there may be need for conferencing between units receiving digital system programming.

15

Summary of Invention

The invention resides in digital television system configured for subscriber conference overlay during program delivery. Billing and advertisement may be personalized according to actual program viewing and/or conferencing activity by DTV receiver. Receiver unit includes media input/output device for multi-user conferencing. Subscribers may be added or removed during programming.

20

Brief Description of Drawings

FIG. 1 is block diagram of integrated digital television program and data delivery system for enabling present invention. FIG. 2 is simplified diagram of novel overlay of subscriber conferencing over program and/or data delivery. FIG. 3 is representative digital TV subscriber unit used according to present invention. FIG. 4 is sample digital TV display according to present invention. FIG. 5 is flow chart of operational steps of present invention.

25

Detailed Description

FIG. 1 is block diagram of integrated digital television program and data delivery system, including one or more residential 12, mobile 14 and business 16 subscriber, receiver and/or digital television (DTV) units coupled over broadcast 6 and/or network 10 channels respectively to program 2 and/or data 4 sources. Controller 8, which is one or more processor, server, computer or other functionally equivalent controller functionality coupled to broadcast 6 and/or network 10 channel, may affect network 10 and broadcast 6 functionality as described herein.

Program source 2 comprises one or more source for broadcasting one or more video and/or data programs, or other functionally equivalent information signal stream, according to conventional digital and/or analog program broadcasting, accessible or addressable publicly or privately over various broadcast 6 equipment, medium, or other functionally equivalent channels, such as cable, optical fiber, microwave, wireless radio frequency (RF) transmission, direct broadcast satellite (DBS), multichannel multipoint distribution system (MMDS), local multipoint distribution service (LMDS), etc. For example, program 2 may comprise live sports or entertainment performance event, such as professional football game, broadcast over restricted pay-per-view television channels.

Data source 2 comprises one or more source for providing two-way or interactive access to one or more database, file, directory, or other functionally equivalent data repository site or signal source, accessible or addressable publicly or privately over conventional network 10, such as local or wide area network, world-wide web Internet/intranet, or combination thereof, including, for example, network switch, router, bridge, gateway, hub, or other wired and/or wireless networking connection equipment for enabling ISDN, SONET, ATM, frame relay, gigabit Ethernet, TCP/IP, virtual private networks, xDSL, or other similar functionality. Additionally, data 2 may comprise text, graphics, video, or other digital or media information, such as current news update,

photographic images, video or audio clips, sports statistics or analysis, stock quotes or financial data, weather forecast report, research data, commercial transaction details, product pricing, etc.

5 In accordance with important aspect of present invention, digital television system includes multiple receivers coupled selectively or programmably to program 2 and/or data 4 source over broadcast 6 and/or network 10 communications infrastructure, wherein conferencing or communication among DTV subscribers 18 occurs during program and/or data delivery. Consequently, controller 8 may send or transmit service bill indication to
10 participating DTV units per actual program view or conference usage. As used herein, term "conference" or "conferencing" is interpreted broadly and understood to mean any communication between multiple parties.

15 Additionally, controller may facilitate electronic narrowcast delivery of personalized or customized commercial and/or non-commercial message to select DTV units. Controller 8 and/or subscribers 18 may employ one or more intelligent agents or functionally equivalent software constructs to search, obtain, or transact certain information or activity across network 10. Controller 8 or subscriber unit 18 processor may selectively restrict or censor pre-defined program or data classes or titles, for
20 example, to content screening criteria and/or procedure provided for so-called V-chip specifications. Preferably, each DTV receiver includes searchable and/or identifiable address and various multimedia input/output device capability for enabling video conferencing. Moreover, DTV units may be added or removed during conference period.

25 Accordingly, FIG. 2 shows overlay of subscriber conferencing 20 over program and/or data delivery to subscribers 18. In this networked configuration, controller 8 effectively serves as broadband system headend processor for generating, forwarding, modifying, storing, accessing or otherwise controlling program/data delivery to

subscribers 18, while generating, forwarding, modifying, storing, accessing or otherwise controlling video conferencing signal transmission between subscribers 18.

Preferably, such program/data signal generated, transmitted or otherwise
 5 processed to receiver units comply with established DTV standards, such as ATSC or other generally accepted industry DTV information or signal format and/or protocol interface, and video conferencing signal generated, transmitted or otherwise processed between receiver units comply with established video conferencing standards, such as H.323, H.324, H.320, T.120 or other generally accepted industry video/data conferencing
 10 information or signal format and/or protocol interface, such currently published or online-accessible standards being hereby incorporated by reference.

FIG. 3 shows digital television subscriber unit 22, which may be implemented as one or more DTV receivers 12, 14, or 16 of FIG. 1. Preferably, DTV unit 22, which
 15 functions in compliance with Advanced Television Systems Committee (ATSC) standard for DTV equipment and system operation, substantially includes display panel or screen with video frame buffer 24, digital video-conferencing camera or image sensor 26, microphone 28, keyboard and/or mouse 30, speaker(s) 32, processor or controller 34, digital memory or recordable video disk storage 36, peripheral card reader 38, remote
 20 control infrared interface 40, network interface or modem 42 (e.g., for coupling to network channel 10), digital compressed video encoder/decoder (i.e., according to Moving Pictures Experts Group (MPEG) industry standards)), radio frequency (RF), broadband or wireless communications interface 46 (e.g., for coupling to broadcast channel 6), and operating system, BIOS, browser, or other associated kernel software 48
 25 for generally enabling system and controller 34 operation and network communications.

It is contemplated that ATSC-compliant DTV unit 22 may be embodied as well in personal or network computer, workstation, set-top television device, or functionally

equivalent processing and associated network equipment, as configured to operate as specified herein according to present invention.

Moreover, controllers 8, 34 execute one or more computer programs for
5 performing functions as described herein, preferably according to embedded or real-time software syntax, such as JAVA and/or Windows CE, which currently published or on-line specifications are hereby incorporated by reference.

When DTV unit 22 operates according to present invention, sample display 24
10 screen output may be as represented in FIG. 4. In particular, display 24 may integrate, combine, mix, or otherwise include program 52 and/or data 54, effectively through video frame buffer, with video conferencing windows from current (i.e., self) and/or other DTV participants 56 coupled thereto, preferably during program/data delivery. For example,
15 each screen element 52, 54, 56 may be shown as picture within or adjacent to another picture element. In this overlaid manner, each DTV unit in select set displays common program and/or data stream, as well as conference video and audio signal output as generated from video camera and microphone from other participant DTV units.

Preferably, such program and/or video signals are compressed and encoded
20 according to industry standard such as MPEG format. Display 50 may also show whiteboard-type screen commonly among participants 56 for jointly communicating text, graphics, or other observable or audible program or data, such as for workgroup or class collaboration to review or discuss draft documents, faxes, or other forms or files.

FIG. 5 shows operational flow chart, including steps for system configuration and
25 subscription set-up 60, program and/or data delivery 62, participant conference 64, and controller billing 66. Preferably, controller 8, serves as central processor to coordinate DTV unit set-up, user smart-card account authorization or identity authentication program/data and/or conference scheduling, programming, viewing, output formatting,

conference access and communication, billing, advertising, and other associated activity, particularly for managing access to program 2, data 4, as well as DTV video conferencing signals 20. To reduce latency, controller 8 may transmit static image instead of live video.

5 For example, controller 8 may authorize or cause certain DTV units to be added or removed dynamically from one or more video conferencing active set or selected logical group, as well as restrict select DTV unit(s) from viewing certain program and/or data. Moreover, controller 8 monitors one or more actual program/data viewing and/or conferencing usage for appropriate billing. Furthermore, controller 8 may direct
10 personalized or targeted commercial, incentive, or advertising messages to certain recognized demographic interest group, DTV subscribers or participant video conferencing parties.

 Preferably, controller 8 directs such messages dynamically or adaptively according
15 to current subscriber or participant information activity or needs, as well as product availability, market pricing, or other commercial attribute. Additionally, controller 8 may take corrective action or functional adjustment to redirect, restrict, control, or otherwise manage network, program/data, or other system resources, upon detecting actual or possible performance bottlenecks or other equipment or connection fault causing
20 undesirable impact on such information delivery.

 In one embodiment of present invention, DTV system is configured for luxury-suite type or other effectively exclusive membership multi-user conferenced viewing of live sports event, such that professional football, basketball, baseball, hockey, soccer, or
25 other competitive individual, team, or tournament telecast is provided as program 2 through broadcast channel 6, including preferably statistical or background data 4 about player, team, or other related game aspect. In particular, controller 8 provides proper access by authorized DTV subscribers 18 to such sports program and/or data.

Additionally, controller 8 coordinates or monitors video conferencing activity occurring directly or indirectly between DTV units watching common program/data stream.

Hence, for example, initially, during configuration subscription setup phase 60,
5 system or headend controller 8 begins to identify system configuration, network address, program order and account status of any subscriber units coupled thereto over broadcast 6 and/or network 10 channels. Commercial transaction may occur to define DTV receiver unit user subscriptions, particularly for authenticating, billing, scheduling, notifying, requesting or otherwise providing desired access to any upcoming or current program 2 or
10 database 4. As appropriate, controller 8 may conduct remote diagnostics over such channels to various units 12, 14, 16 to ensure proper functioning for signal delivery.

Next, program and/or data delivery may commence according to controller 8 programmable selection to enable digital transmission for electronic signal delivery 62 of
15 certain program 2 and/or data 4 for presentation in integrated display 50 of selected or addressed DTV subscriber units 18. Then, thereafter, prior, or simultaneously, select participants 56 are enabled for video conferencing 20, particularly by allowing such participants to be monitored by activated video camera 26 and/or microphone 28, for transmission of monitored static image or live motion video compressed encoded digital
20 signal for presentation in display screen 50. Upon completion of program/data delivery and conferencing activity, controller 8 may send proper billing indications to participant DTV units. Controller 8 may appropriately add or delete subscriber 18 in active database.

Therefore, in this combined DTV program/data viewing and select viewer
25 conferencing scheme, important objective of emulating luxury-suite or otherwise more collaborative, intimate or personal conditions among associated audience members located at different locations is achieved effectively.

Optionally, while receiving program/data, conferenced subscriber may also send or receive electronic text message to other subscribers or other mail account addressable through network 10, or run various application programs locally or in distributed client-server networked manner, preferably in common with other conferenced DTV units, such as for multi-user simulation or gaming application.

To improve system program/data broadcast or video conferencing performance, for example, when restricted effectively by channel bandwidth or traffic congestion, controllers 8, 34 may reduce or eliminate actual transmission of full content video signal, and preferably transmit information subset, such as static image, text and/or voice.

Foregoing described embodiments of invention are provided as illustration and description. It is not intended to limit invention to precise form described. Other variations and embodiments are possible in light of above teaching, and it is thus intended that scope of invention not be limited by detailed description, but rather by claims as follow.

Claims

We claim:

- 5 1. In a digital television system comprising a plurality of receivers coupled to a program source, a method for providing subscriber conferencing with program delivery comprising the steps of:
- coupling a program source to a plurality of digital television (DTV) receivers;
- delivering a program from the program source to the DTV receivers coupled
- 10 thereto; and
- enabling a conference between the coupled DTV receivers during program delivery.
2. The method of Claim 1 further comprising the step of:
- 15 sending a billing message to one or more of the coupled DTV receivers according to program viewing or conferencing activity.
3. The method of Claim 1 further comprising the step of:
- providing to one or more coupled DTV receiver a personalized commercial
- 20 message.
4. The method of Claim 1 wherein:
- each coupled DTV receiver comprises a video camera, such that the conference comprises a multi-way video conference between coupled DTV receivers.
- 25
5. The method of Claim 1 further comprising the step of:
- adding or removing a DTV receiver coupled to the program source during program delivery.

6. A digital television system comprising:
a program source; and
a plurality of digital television (DTV) receivers coupled to the program source;
wherein a program is deliverable from the program source to the DTV receivers,

5 and a conference is enabled between the coupled DTV receivers

7. The system of Claim 6 wherein:

each DTV receiver comprises a video camera, such that the conference comprises
a video conference between coupled DTV receivers.

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8. Digital television apparatus comprising:
a display, a camera, and an interface;

wherein the interface couples to a program source for presentation of a program
by the display, the interface receiving a conference signal from a conference participant for
15 presentation of a video conference by the display, and the camera generating a video signal
for transmission to the conference participant.

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DIGITAL TELEVISION WITH SUBSCRIBER CONFERENCE OVERLAY

Abstract

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Digital television system overlays subscriber two-way communication during broadcast program delivery to create virtual audience community. Individual or group billing and advertisement is personalized per DTV receiver program viewing and/or conferencing activity. Subscriber receiver includes camera and other media I/O device for multi-way video conferencing. Participants may be added or removed dynamically during programming or conferencing.

FIG. 1

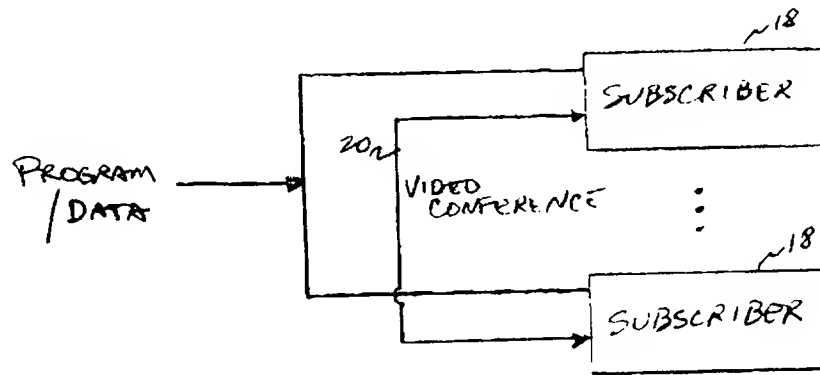
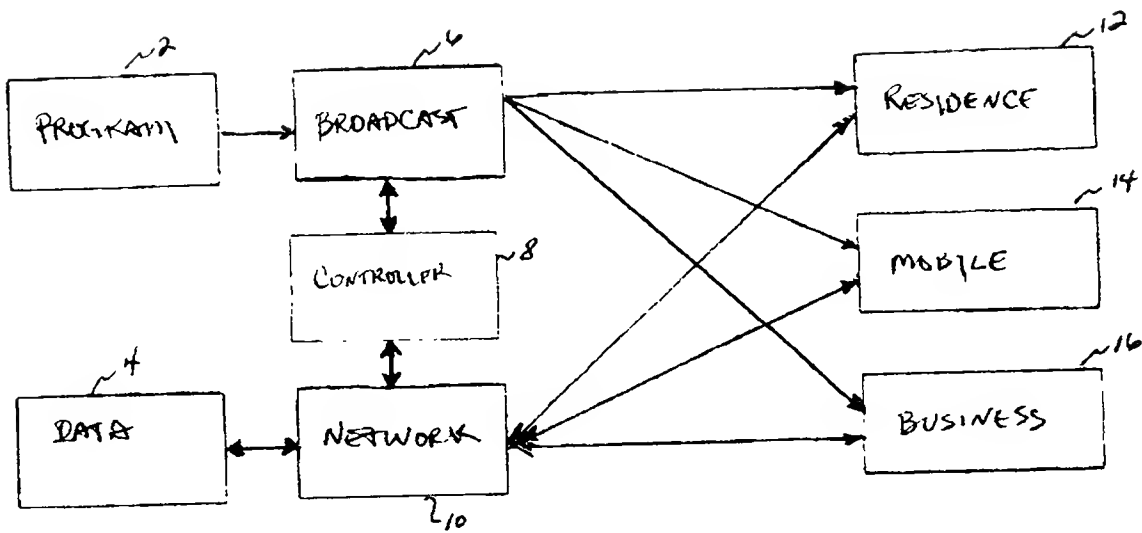


FIG. 2

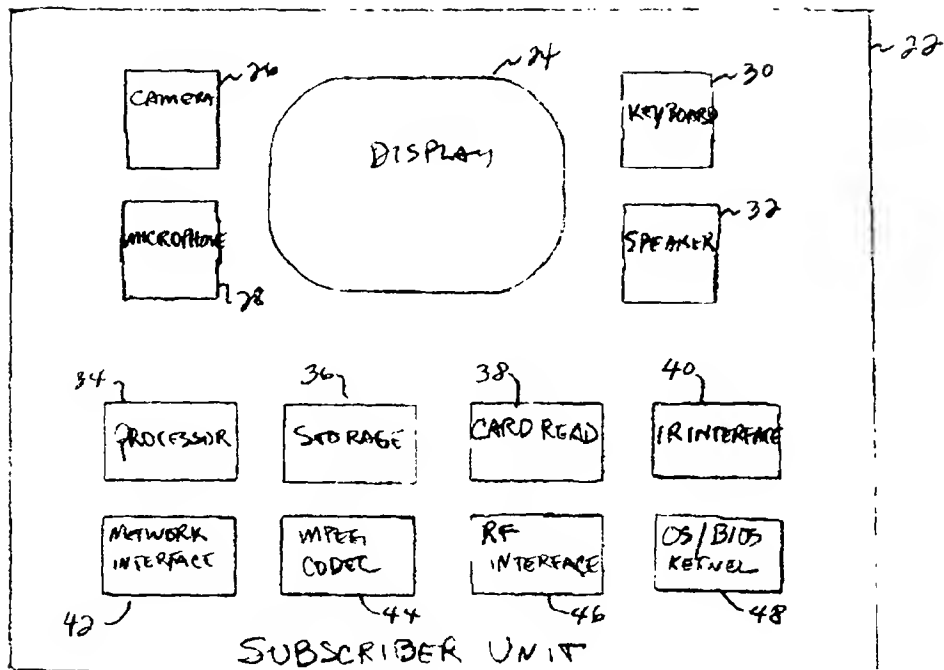


FIG. 3

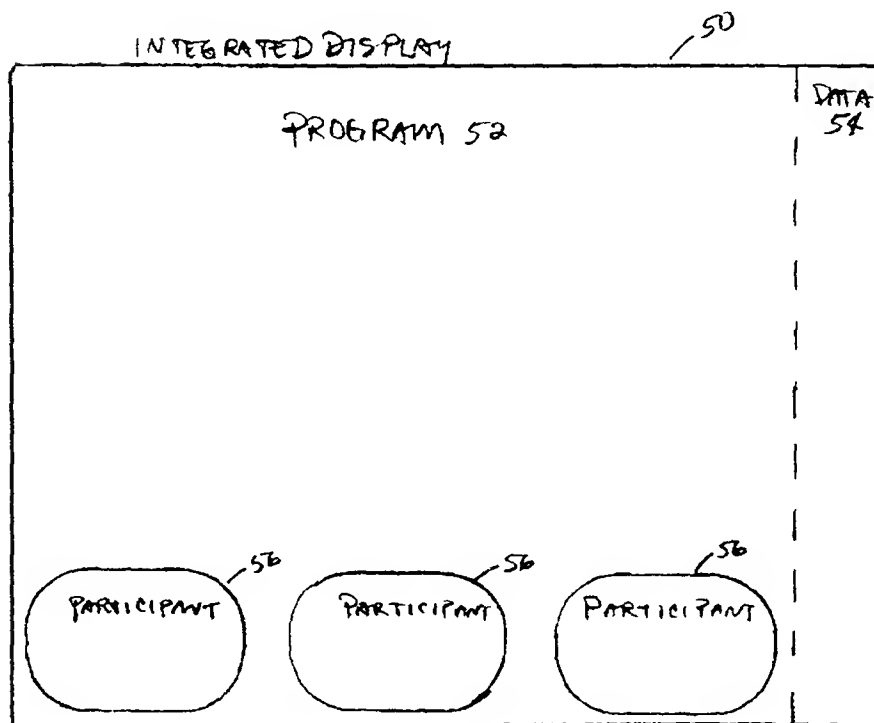


FIG. 4

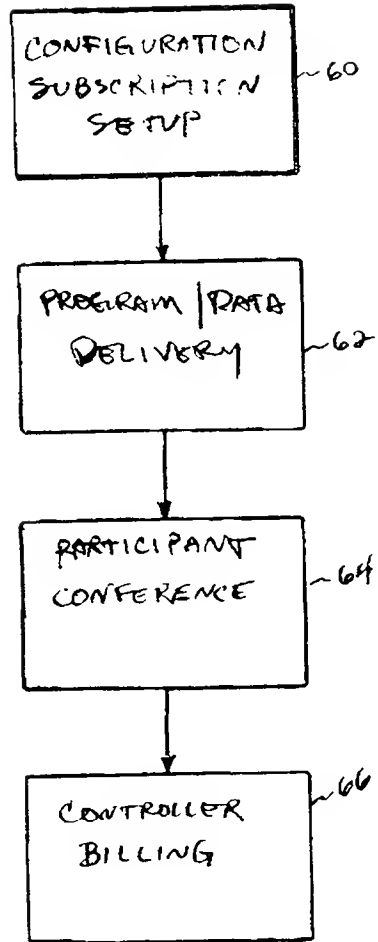


FIG. 5

Declaration for Patent Application

Docket No: FERN-P003

As a below named inventor, I hereby declare that:

My residence, postal address and citizenship are as stated below next to my name.

I believe that I am the original, first and sole inventor (if only one name is listed below) or an original first and joint inventor (if multiple names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled:

DIGITAL TELEVISION WITH SUBSCRIBER CONFERENCE OVERLAY

the specification of which is attached hereto unless the following information is indicated:

_____ was filed on _____;
as United States Application Number or PCT International Application Number _____;
and was amended on _____ (if applicable).

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendments referred to above.

I acknowledge the duty to disclose information that is material to patentability as defined in 37 C.F.R. 1.56.

I hereby claim foreign priority benefits under 35 U.S.C. 119(a)-(d) or 365(b) of any foreign application(s) for patent or inventor's certificate, or 365(a) of any PCT International application which designated at least one country other than the United States, listed below and have also identified, as so indicated below, any foreign application for patent or inventor's certificate, or PCT International application having a filing date before that of the application on which priority is claimed.

Prior Foreign Application(s)

Priority Claimed

_____	_____	_____	___ Yes ___ No
(Application No.)	(Country)	(Day/Month/Year Filed)	
_____	_____	_____	___ Yes ___ No
(Application No.)	(Country)	(Day/Month/Year Filed)	

I hereby claim the benefit under 35 U.S.C. 119(c) of any United States provisional application(s) listed below.

(Application No.)	(Day/Month/Year Filed)
-------------------	------------------------

I hereby claim the benefit under 35 U.S.C. 120 of any United States application(s), or 365(c) of any PCT International application designating the United States, listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States or PCT International application in the manner provided by the first paragraph of 35 U.S.C. 112, I acknowledge the duty to disclose information that is material to patentability as defined in 37 C.F.R. 1.56 that became available between the filing date of the prior application and the national or PCT International filing date of this application.

_____	_____	_____
(Application No.)	(Day/Month/Year Filed)	(Status - patented, pending, abandoned)

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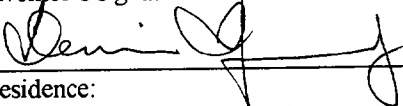
Dennis S. Fernandez, Esq.
2085 Portola Road
Woodside, CA 94062

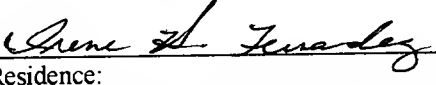
Or Email Address: **dennis@iploft.com**

Direct telephone calls to:

(650) 529-9237Or Fax: **(650) 529-9315**

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and beliefs are believed to be true; and further that these statements were made with knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Full name of sole or first inventor: Dennis Sunga Fernandez	
Inventor's signature 	Date June 10, 1998
Residence: 2085 Portola Road, Woodside, CA 94062	
Citizenship: United States	
Postal Address: same as Residence	

Full name of joint inventor: Irene Hu Fernandez	
Inventor's signature 	Date 6/10/98
Residence: 2085 Portola Road, Woodside, CA 94062	
Citizenship: United States	
Postal Address: same as Residence	